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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,192	02/07/2001	David Charles Adams	ADN2653P1US	9033

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Lainie E. Parker
Akzo Nobel Inc.
Intellectual Property Department
7 Livingstone Avenue
Dobbs Ferry, NY 10522-3408

EXAMINER	
LEUNG, JENNIFER A	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/778,192	ADAMS ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,13 and 14* is/are pending in the application.

4a) Of the above claim(s) *10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,13 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-14* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 7, 2005 has been entered.

Response to Amendment

2. Applicant's amendment submitted on February 7, 2005 has been received and carefully considered. Claims 10-12 are withdrawn from consideration. Claims 13 and 14 are newly added. Claims 1-9, 13 and 14 are currently under prosecution.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, "a polymer emulsion" (line 7) lacks proper positive antecedent basis, as it is unclear as to whether a polymer emulsion is supplied to or formed within the apparatus. Also, "a pig" (line 9) lacks proper positive antecedent basis, and it is unclear as to the structural relationship of the pig to the other elements of the apparatus. Also, it is unclear as to the structural relationship of "an outlet for the discharge of overflow of the polymer emulsion" (line

8) to the other elements of the apparatus, and how the polymer emulsion becomes an "overflow" of polymer emulsion. Also, it is unclear as to the structural relationship of "a by-pass tube" to the other elements of the apparatus.

Regarding claim 3, it is unclear as to the relationship of "a suction side" and "a delivery side" (line 2) of the circulation pump to "an inlet" and "an outlet" of the circulation pump, set forth in claim 1, line 2. Additionally, it is unclear as to the structural limitation applicant is attempting to recite by, "the part of the reactor tube between the suction and delivery sides of the circulation pump serving as the pig receiving station," (lines 5-6), because the pig receiving station is in "parallel connection with the reactor tube" and therefore cannot be part of the reactor tube, as set forth in claim 1, lines 9-11.

Regarding claim 4, it is unclear as to which tube is meant by "the tube" (line 2) since both a "reactor tube" and a "by-pass tube" are set forth in claim 1.

Regarding claim 13, it is unclear as to the structural relationship of "at least one monomer feed" (line 5) to the other elements of the apparatus. Also, it is unclear as to the structural relationship of "at least one feed for water phase" (line 6) to the other elements of the apparatus. Also, it is unclear as to the structural relationship of "an outlet for the discharge of a polymer emulsion" (line 7) to the other elements of the apparatus. Also, "a polymer emulsion" (line 7) lacks proper positive antecedent basis, as it is unclear as to whether a polymer emulsion is supplied to or formed by the apparatus. Also, it is unclear as to the structural relationship of "a by-pass tube" (line 8) to the other elements of the apparatus. Also, "a pig" (line 8) lacks proper positive antecedent basis, and it is unclear as to the structural relationship of the pig to the other elements of the apparatus. Also, the phrase "may be separated" (line 11) is considered vague and

indefinite, since it is unclear as to whether applicant is reciting a positive structural limitation.

Regarding claim 14, it is unclear as to the structural relationship of "at least one monomer feed" (line 5) to the other elements of the apparatus. Also, it is unclear as to the structural relationship of "at least one feed for water phase" (line 6) to the other elements of the apparatus. Also, it is unclear as to the structural relationship of "an outlet for the discharge of a polymer emulsion" (line 7) to the other elements of the apparatus. Also, "a polymer emulsion" (line 7) lacks proper positive antecedent basis, as it is unclear as to whether a polymer emulsion is supplied to or formed by the apparatus. Also, it is unclear as to the structural relationship of "a by-pass tube" (line 8) to the other elements of the apparatus. Also, "a pig" (line 8) lacks proper positive antecedent basis, and it is unclear as to the structural relationship of the pig to the other elements of the apparatus.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 7-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouzier (US 3,595,846) in view of Spott (DE 3 233 557).

Regarding claims 1 and 2, Rouzier (FIG. 1; column 6, line 46 to column 7, line 69) discloses an apparatus comprising:

a circulation pump **42** having an inlet and an outlet;

at least one monomer feed (i.e., via pump **39**, point **38**) and at least one feed for a fluid phase which may comprise a solvent and monomer (i.e., supplied via intake **31**);

a reactor tube connecting the outlet of the circulation pump **42** with the inlet of the

circulation pump **42** (i.e., including line **41**, intervening station **40**, and the right portion of tubular chamber **21** located between line **41** and station **40**) and which receives the monomer feed and water phase feed and through which the circulation pump **42** recirculates a polymer emulsion along the entire length of the reactor tube;

an outlet for the discharge of an overflow of the polymer emulsion (i.e., fourth intervening station **43**, with pump **44**);

a by-pass tube (i.e., the left portion of the tubular chamber **21**, located between line **41** and station **40**) for bypassing a pig (i.e., sphere **26**) around the circulation pump **42**; and

a pig receiving station (i.e., distributor **24**; column 7, lines 30-47) which is in parallel connection with the circulation pump or the reactor tube, and further integrated into the bypass tube (i.e., integrated with the left portion of chamber **21**, between line **41** and station **40**).

Although Rouzier is silent as to the at least one feed for fluid phase **31** comprising a "water phase", it would have been obvious for one of ordinary skill in the art at the time the invention was made to select other known fluids, such as a water phase, for the at least one feed **31** in the apparatus of Rouzier, on the basis of suitability for the intended use (e.g., depending on the type of monomer feed), because polymerization with a water phase feed is well known in the art, as evidenced by Spott (e.g., "photo-initiated emulsion polymerization of water-soluble monomer"; translation of page 3, line 7 to page 4, line 2; Example beginning on page 12).

Regarding claim 3, the circulation pump **42** inherently comprises a suction side and a delivery side, as evidenced by the circulation of fluid from line **41**, through the pump **42**, and into the third intervening station **40** (see FIG. 1). Although not labeled in the figure, the reactor tube portion **21** comprises an aperture for enabling the draw off of fluid to line **41**. Additionally,

the left portion of chamber **21**, between the suction and delivery sides **41** and **40** of the pump **42**, serves as the pig receiving station (see FIG. 1).

Regarding claim 7, Rouzier discloses the reactor tube comprises means (i.e., pressurized reaction mixture flowing within reactor tube **21**; column 4, lines 7-20) for directing a pig **26** into the pig receiving station **24**.

Regarding claim 8, Rouzier further discloses that a substantial part of the reactor tube may be formed into at least one helical coil (see FIG. 2).

Regarding claim 9, Rouzier discloses, "The transfer of a separator **26** from the terminal point **23** to the point of origin **22** is controlled manually, or automatically by a suitable means including an automatic switch **S** operated at timed intervals or by the passage of a separator through a given point of the circuit, e.g., the point **46**," (column 7, lines 64-69), and therefore, the apparatus will inherently comprises a pig detector for checking whether the pig (i.e., a separator **26**) is present in the pig receiving station **24**. An example of a known pig detector is further evidenced by Spott (i.e., a switching impulse generated by a photoelectric cell **17**, which detects the presence of a pig **4**; FIG. 1; translation of page 7, lines 14-21).

Regarding claim 13, Rouzier (FIG. 1; column 6, line 46 to column 7, line 69) discloses an apparatus comprising:

a circulation pump **42** having an inlet and an outlet; a reactor tube which connects the outlet of the circulation pump **42** to the inlet of the circulation pump **42** (i.e., including line **41**, intervening station **40**, and the right portion of tubular chamber **21** located between line **41** and station **40**); at least one monomer feed (i.e., via pump **39**, point **38**); at least one feed for a fluid phase which may comprise a solvent and monomer (i.e., supplied via intake **31**); an outlet for the

discharge of a polymer emulsion (i.e., fourth intervening station **43**, with pump **44**); a by-pass tube (i.e., the left portion of the tubular chamber **21**, located between line **41** and station **40**) for bypassing a pig (i.e., sphere **26**) around the circulation pump **42**; and a pig receiving station (i.e., distributor **24**; column 7, lines 30-47) which is in parallel connection with the circulation pump or the reactor tube.

Rouzier discloses the pig receiving station (i.e., the distributor **24**) may comprise an assembly of fixed elements, of which are assembled by any suitable means including bolts, rivets, welding, and soldering (column 9, lines 20-25; FIG. 6-9). As illustrated in FIG. 6, for example, the pig receiving station comprises a block **120** coupled to tubes **125** and **123** by means of threaded bolts, not labeled. Thus, the pig receiving station **24** in the apparatus of Rouzier is, inherently, releasably engaged to the by-pass tube or the reactor tube such that the pig receiving station may be separated from the apparatus.

Although Rouzier is silent as to the at least one feed for fluid phase **31** comprising a "water phase", it would have been obvious for one of ordinary skill in the art at the time the invention was made to select other known fluids, such as a water phase, for the at least one feed **31** in the apparatus of Rouzier, on the basis of suitability for the intended use (e.g., depending on the type of monomer feed), because polymerization with a water phase feed is well known in the art, as evidenced by Spott (e.g., "photo-initiated emulsion polymerization of water-soluble monomer"; translation of page 3, line 7 to page 4, line 2; Example beginning on page 12).

5. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouzier (US 3,595,846) in view of Spott (DE 3 233 557), as applied to claim 1 above, and further in view of Wennerberg et al. (US 3,425,083).

Regarding claims 4 and 5, the aperture leading to draw off line **41** inherently has a width that is smaller than the width of the pig **26**, as evidenced by only the reaction fluid flowing to line **41** (FIG. 1). Rouzier, however, is silent as to the aperture defining a "slot" that extends substantially in the longitudinal direction of the tube. Wennerberg et al. teaches an apparatus comprising a closed loop tube **3** having an aperture in the shape of a slot (i.e., longitudinally extending slots **5** or **12**) for allowing a portion of the liquid within the tube to escape while maintaining the rest of the liquid and a ball **6** (i.e., pig) in circulation; the slots **5**, **12** being small enough so that ball **6** is unable to pass; and the slots **5**, **12** performing a function substantially identical to the function of the aperture Rouzier (column 2, lines 52-63). It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a slot for the aperture in the apparatus of Rouzier, on the basis of suitability for the intended use, because substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claim 6, although the collective teachings of Rouzier, Spott and Wennerberg et al. are silent as to the width of the slot increasing downstream, it would have been obvious for one of ordinary skill in the art at the time the invention was made select an appropriate configuration for the slot in the modified apparatus of Rouzier, on the basis of suitability for the intended use (i.e., for achieving a given flow rate through the slot), since it has been held that changes in size involve only ordinary skill in the art, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rouzier (US 3,595,846) in view of in view of Spott (DE 3 233 557) and Allen (US 3,220,432).

Rouzier (FIG. 1; column 6, line 46 to column 7, line 69) discloses an apparatus comprising:

a circulation pump **42** having an inlet and an outlet; a reactor tube which connects the outlet of the circulation pump **42** to the inlet of the circulation pump **42** (i.e., including line **41**, intervening station **40**, and the right portion of tubular chamber **21** located between line **41** and station **40**); at least one monomer feed (i.e., via pump **39**, point **38**); at least one feed for a fluid phase which may comprise a solvent and monomer (i.e., supplied via intake **31**); an outlet for the discharge of a polymer emulsion (i.e., fourth intervening station **43**, with pump **44**); a by-pass tube (i.e., the left portion of the tubular chamber **21**, located between line **41** and station **40**) for bypassing a pig (i.e., sphere **26**) around the circulation pump **42**; and a pig receiving station (i.e., distributor **24**; column 7, lines 30-47) which is in parallel connection with the circulation pump or the reactor tube.

Although Rouzier is silent as to the at least one feed for fluid phase **31** comprising a "water phase", it would have been obvious for one of ordinary skill in the art at the time the invention was made to select other known fluids, such as a water phase, for the at least one feed **31** in the apparatus of Rouzier, on the basis of suitability for the intended use (e.g., depending on the type of monomer feed), because polymerization with a water phase feed is well known in the art, as evidenced by Spott (e.g., "photo-initiated emulsion polymerization of water-soluble monomer"; translation of page 3, line 7 to page 4, line 2; Example beginning on page 12).

Rouzier is further silent as to the pig receiving station **24** comprising a means for

removing the pig from or inserting the pig into the pig receiving station without disruption to the flow of the polymer emulsion. Allen (column 4, lines 17-27; FIG. 1-3) teaches a pig receiving station (i.e., device **21**) comprising means for removing a pig (i.e., separator **41**) from or inserting a pig into the pig receiving station without flow disruption (i.e., by opening cover **34** and inserting a pig **41** via nipple **33** into pocket **40**, or removing a pig **41** from pocket **40** via nipple **33**). It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a pig receiving station having means for inserting or removing a pig for the pig receiving station **24** in the apparatus of Rouzier, on the basis of suitability for the intended use, because a pig receiving station having means for removing or inserting a pig would permit the pig to be replaced or repaired, as taught by Allen (column 1, lines 30-43).

Response to Arguments

7. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new grounds of rejection, with a reinterpretation of the prior art reference to Rouzier.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
April 7, 2005

Hien Tran

HIEN TRAN
PRIMARY EXAMINER